A MOLLUSCAN INTERMEDIATE HOST TO *FASCIOLA HEPATICA* LINNAEUS FERAL IN SOUTH-WESTERN AUSTRALIA.

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In March 1975, a population of the pond snail *Lymnaea (Pseudosuccinea) columella* Say was discovered in the Canning River above the Kent Street Weir at Cannington, a Perth suburb. Specimens collected on this occasion were presented to the Western Australian Museum, where the identification was made. *L. (P.) columella* is a confirmed intermediate host of the Liver Fluke of domestic livestock *Fasciola hepatica* Linnaeus (Pullan, 1970) and is the first such species to be recorded from south-western Australia.

On several occasions from late 1972 into 1974, odd specimens of this then unfamiliar snail were received for identification at the Western Australian Museum. All had been found in local aquaria and a non-Australian identity was suspected. This opinion was subsequently confirmed by Dr. J. B. Burch at the University of Michigan, Ann Arbor, who recognized the specimens as *L. (P.) columella*, an eastern North American species that has been introduced to western North America, Central America, Cuba, Europe and South Africa according to Hubendick (1951) and to New Zealand (Pullan, 1970; Climo and Pullan, 1972). A feral Australian population has recently been discovered at Sydney, New South Wales (Ponder, 1975).

The shell of *L. (P.) columella* is unlike that of any other lymnaeid snail known to occur in Western Australia. It is elongate and succineiform, with a height to width ratio of about 2.2 : 1 (Fig. 1). The largest specimen meas-

Fig. 1.—Shell of *Lymnaea (Pseudosuccinea) columella Say x 2.*

ured (3 whorls) has a height of 11 mm, width of 5 mm and an apertural height of 7.5 mm. Under magnification, the shell is seen to bear a very fine, close spiral sculpture, most evident on the last whorl. The animal is typically lymnaeid with eyes on the head between two broad flat triangular tentacles; body greyish-brown. The succineid snails, which have a superficially similar shell, have four cylindrical tentacles on the head, the eyes being located on the tips of the upper, larger pair.

The only other lymnaeid snail known to have become established in south-western Australia is *Austropeplea lessoni* (Deshayes), first noted at Coolup in 1941 (Robinson, 1949) and subsequently collected throughout the entire region north to the Northampton district. Its shell is ovate with a short spire and very thin, smooth and transparent whorls; the animal is yellow-brown. *A. lessoni* is native to eastern Australia and New Guinea and appears to have been introduced to Western Australia. The related *A. tomentosa* (Pfeiffer), a confirmed host to *F. hepatica* (Boray and McMichael, 1961), inhabits the northern part of Western Australia but Museum records suggest that it does not extend south of the Gascoyne River System. The European *Lymnaea stagnalis* (Linnaeus) is kept in Perth aquaria but is not known to have become established locally.

The source of the Australian infestations of L. *(P.) columella* is unknown but the circumstantial evidence suggests that the exotic fish trade may have been implicated. What appears to be a parallel situation has arisen

in Florida, U.S.A., where a thiarid snail of the genus *Tarebia*, believed to be a host species of the Oriental Lung Fluke, *Paragonimus westermani*, has become feral following its introduction with aquatic plants from the Philippines (Morrison, 1954). The present local situation suggests that the quarantine procedures, which should control the entry of exotic organisms into Australia, are not fully effective. In our opinion, a national survey of the aquarium molluses of Australia is overdue in view of the association of some freshwater snails, such as *L. (P.) columella*, with parasitic diseases of man and livestock.

We thank Dr. J. B. Burch, now of the Australian Museum, Sydney, for the identification of specimens and Dr. W. F. Ponder, Australian Museum, for information regarding the New South Wales occurrence of *L. (P.) columella*. The illustration was drawn by Lesley J. Gilchrist.

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SOME ASPECTS OF ABORIGINAL OCCUPATION SITES IN THE PERTH METROPOLITAN AREA.

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When living off the land (before Europeans arrived) Aborigines often camped on the coastal plain. Such places are referred to as occupation sites.

Several sites are known throughout the Midland, Kewdale and Lynwood areas, as well as along the Darling Scarp. (Akerman, 1969; Butler, 1958 and Hallam, 1972, 1973). The general characteristics of these sites are as follows: they are often situated near permanent water sources; on sandy ridges; usually with little or no vegetation where there is evidence of an artefact scatter. Therefore, if you came across a site, you would find artefacts scattered on the ground.

The earliest phase of occupation can tentatively be divided into Inland and Coastal localities. Inland refers to sites on and around the scarp. The artefacts associated with this locality are pebble choppers and steep edge scrapers (including horse-hoof scrapers) often made from dolerite. Some of these artefacts are river washed stones that have been flaked only once, the sharp edge making an adequate cutting tool. Coastal areas start from the foot of the scarp continuing across the sandy coastal plain to the sea. Artefacts found in this area are steep scrapers on flakes and scrapers made from